

Shizuo MOMOSE*: **Prothallia of some ferns from
the Galapagos Islands (1)****

百瀬静男*: ガラパゴス産数種のシダの前葉体 (1)**

In 1959, Dr. M. Ono of the Makino Herbarium, Tokyo Metropolitan University, visited the Galapagos Islands as a member of the Scientific Expedition for Galapagos Islands of Tokyo University of Fishery and brought spores of some ferns collected in these Islands. The present report deals with the description of these fern prothallia. Cultures of prothallia were carried out at the Koishikawa Botanical Gardens, University of Tokyo, in the year 1960. The corresponding specimens of these ferns were identified by Dr. M. Tagawa of the Botanical Institute, Kyoto University, as follows:

- 1) *Trachypteris pinnata* (Hook. f.) C. Chr.—Galapagos: Santa Maria Isl., Bahia Black Beach, M. Ono No. 5101.
- 2) *Dryopteris pedata* (L.) Fée var. *palmata* (Willd.) Hicken—Galapagos: Santa Maria Isl., Bahia Black Beach, M. Ono No. 5134.
- 3) *Ctenitis ampla* (Humb. et Bonpl. ex Willd.) Copeland—Galapagos: Santa Maria Isl., Bahia Black Beach, M. Ono No. 5134.
- 4) *Asplenium auritum* Sw.—Galapagos: San Cristobal, on the way to Progreso, M. Ono No. 1009.
- 5) *Polypodium polypodioides* (L.) J. Smith—Galapagos: San Cristobal, M. Ono No. 1008.

1) ***Trachypteris pinnata*** (Hook. f.) C. Chr. Prothallia breadthwise and deformedly heart-shaped; wings strongly uplifted, their margins standing close together; apex roughly and shallowly cordate, with wide and squarish bottom of sinus; lower part of the thallus roundly and sharply narrowing toward the tailed base, sometimes cordate or reniform. Protonema 2-3 cells long; original cell cylindrical, projecting beyond the basally persistent and trilobed spore-coat; primary rhizoid inserted at the basal side of original cell. Wings almost equal in size, breadthwise extended, ruffled; wing cells square, of undulate membrane, collenchymatous on the corners and the lateral membrane; margin of wings slightly undulate; marginal cells square in principle, almost smoothly arranged,

* Foreign Students College, Chiba University, 1-Yayoicho, Chiba City. 千葉大学留学生部, 千葉市弥生町 1.

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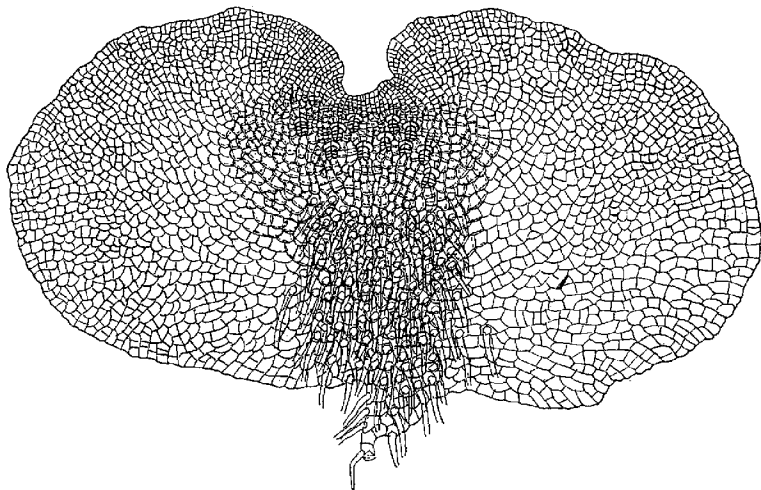


Fig. 1. *Trachypteris pinnata* (Hook. f.) C. Chr. $\times 17$.

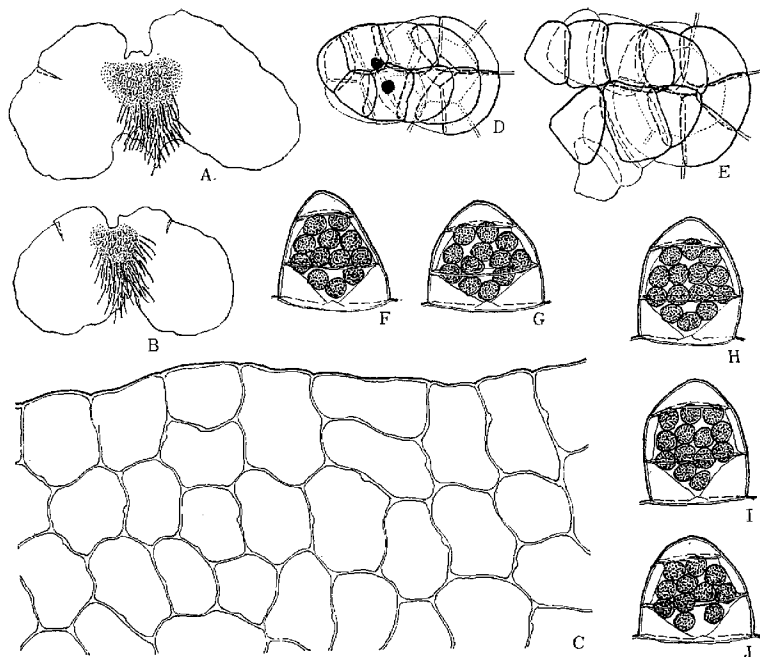


Fig. 2. *Trachypteris pinnata* (Hook. f.) C. Chr.: A-B, general aspects of the thallus. $\times 5$; C, a part of margin. $\times 133$; D-E, archegonia. $\times 200$; F-J, antheridia. $\times 200$.

of flat or slightly concaved free side. Midrib distinctly cushioned from near the base to the very bottom of sinus, large and broad heart-shaped, 3-5 cells thick in the heavier part. Rhizoids arise from the base of thallus to the lower part of cushion, brownish in colour, delicate in texture. Archegonia produced on the distal part of cushion, gregarious; neck of archegonia bends toward posterior, taper in feature, neck cells 4-5 at the anterior and 3-4 at the posterior, dehisces reservedly. Dioecious in appearance. Antheridia produced on small male prothallia, conical or elliptical, sometimes oblique, 67-80 μ in diameter; basal cell almost equal in height to the ring-cell; upper wall of the basal cell funnel-like immersed to the base.

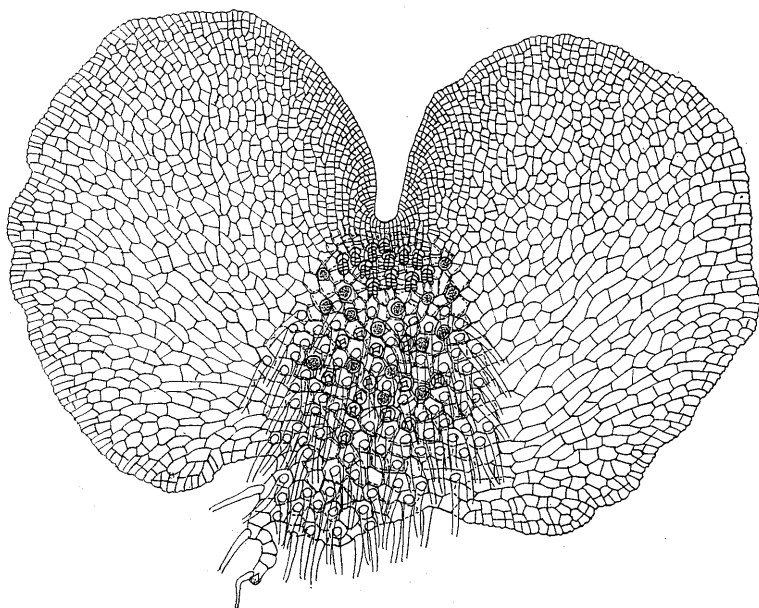


Fig. 3. *Doryopteris pedata* (L.) Fée var. *palmata* (Willd.) Hicken. $\times 17$.

This is a rare fern typifying the small genus *Trachypteris*. Its prothallium is characterized by having such characters as follows: 1) habits of strongly uplifted wings, 2) breadthwise extended and deformed figure with roughly cordate apex, 3) wing cells with undulate membrane, collenchymatous on the corners and the lateral membrane, 4) large and broad-heart-shaped but not so heavier cushion, 5) brownish rhizoids, 6) tapered neck of archegonia which dehisces

reservedly and 7) conical-shaped antheridia with the basal cell which upper wall is funnel-like immersed to the base. Some of these characters are characteristically found in some species or genera of so-called Gymnogrammoid ferns.

2) *Dryopteris pedata* (L.) Fée var. *palmata* (Willd.) Hicken Prothallia symmetrical, roundish, heart-shaped; wings strongly recurved along the midrib; apex deeply and steeply cordate; inner sides of lobes round, opening above the bottom of sinus; lower part of the thallus sharply or truncately narrowing toward the tailed base. Protonema 4-6 cells long; original cell cylindrical,

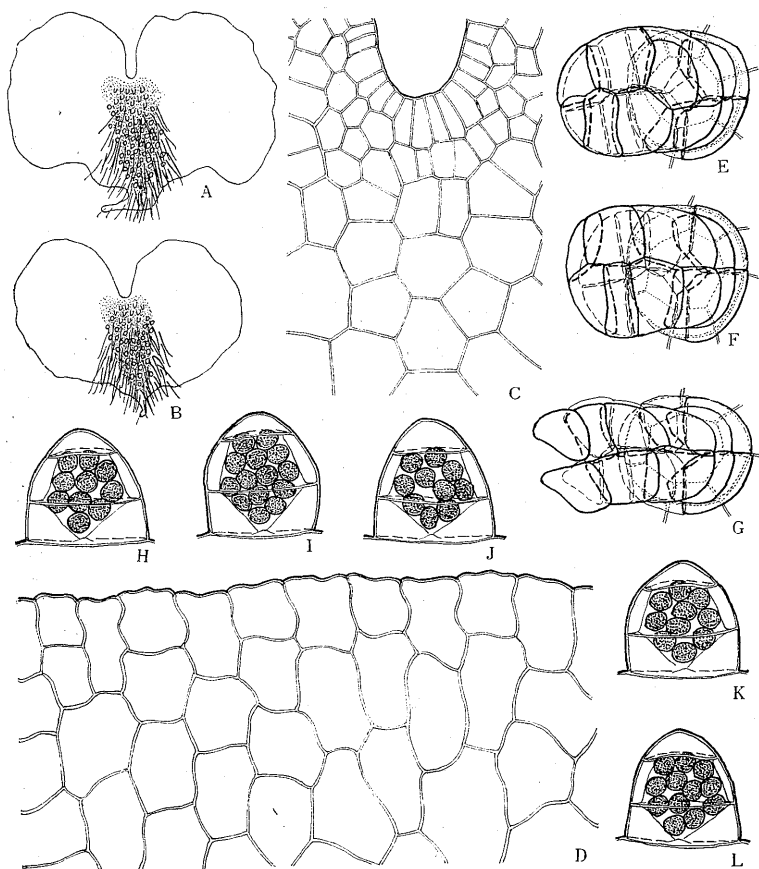


Fig. 4. *Dryopteris pedata* (L.) Fée var. *palmata* (Willd.) Hicken: A-B, general aspects of the thallus. $\times 5$; C, apical meristem. $\times 133$; D, a part of margin. $\times 133$; E-G, archegonia. $\times 200$; H-L, antheridia. $\times 200$.

projecting beyond the basally persistent and trilobed sporecoat; primary rhizoid inserted at the basal side of original cell. Wings equal in size; wing cells square or elongate, of somewhat undulate membrane; margin of wings slightly undulate; marginal cells square or elongate, of concaved free side or waved free side in the broader cells. Midrib distinctly cushioned from near the base to the very bottom of sinus, obovate in shape, 5-6 cells thick in the heavier part. Rhizoids arise from the base of thallus to the upper middle of cushion, colourless, sometimes slightly brownish, delicate in texture. Archegonia produced on the distal part of cushion, gregarious; neck of archegonia bends toward posterior; neck cells 5-6 at the anterior and 3-4 at the posterior, dehisces reservedly. Antheridia produced on the cushion from the lower to the upper and combining or mixing with the archegonial group at the upper, conical or elliptical, 75-85 μ in diameter; basal cell equals in height to the ring cell and wider than it; upper wall of the basal cell funnel-like immersed to the base.

This tropical American fern was designated as the type of the genus *Dryop-*

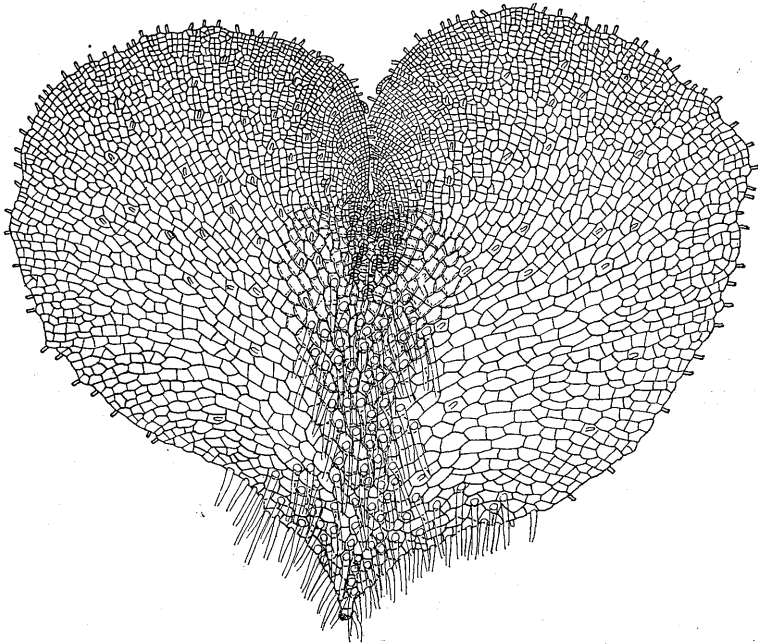


Fig. 5. *Ctenitis ampla* (Humb. et Bonpl. ex Willd.) Copeland. $\times 17$

teris by Copeland (1947). In my examination, the prothallium of this fern is distinguishable from that of its mother species, *D. pedata* (L.) Fée, from Montreal Botanic Garden (original locality unknown), by the character of the roundish heart-shaped form with deeply and steeply cordate apex. In *D. pedata* and also in *D. cancolor* (L.) Kuhn, prothallia are widthwise extended and their apical lobes are divaricate above the bottom of sinus.

3) ***Ctenitis ampla*** (Humb. et Bonpl. ex Willd.) Copeland Prothallia symmetrical, handsome and roundish, heart-shaped; wings butterfly-shaped; apex

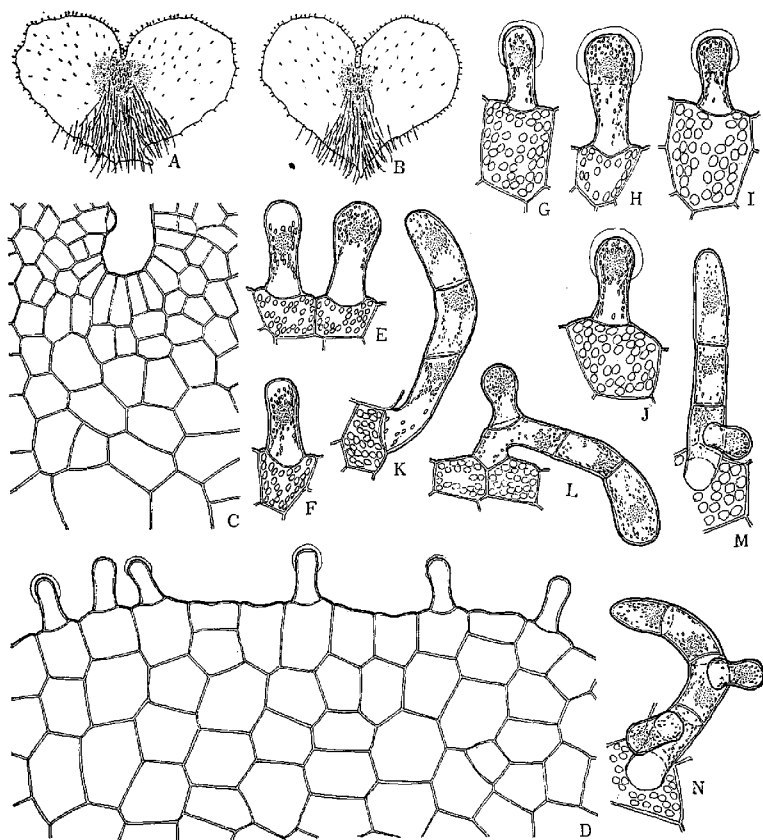


Fig. 6. *Ctenitis ampla* (Humb. et Bonpl. ex Willd.) Copeland: A-B, general aspects. $\times 5$; C, apical meristem. $\times 133$; D, a part of margin. $\times 133$; E-J, unicellular hairs on margin. $\times 133$; K-N, multicellular hairs on margin and surface. $\times 133$.

narrowly and somewhat deeply cordate; inner sides of lobes round, approaching and closed or not above the bottom of sinus; lower part of the thallus roundly narrowing toward the base. Protonema 2-3 cells long; original cell cylindrical, projecting beyond the basally persistent and conchoidal spore-coat; primary rhizoid inserted at the basal side of original cell. Wings equal in size, wing cells square; margin of wings almost entire; marginal cells square, of concaved

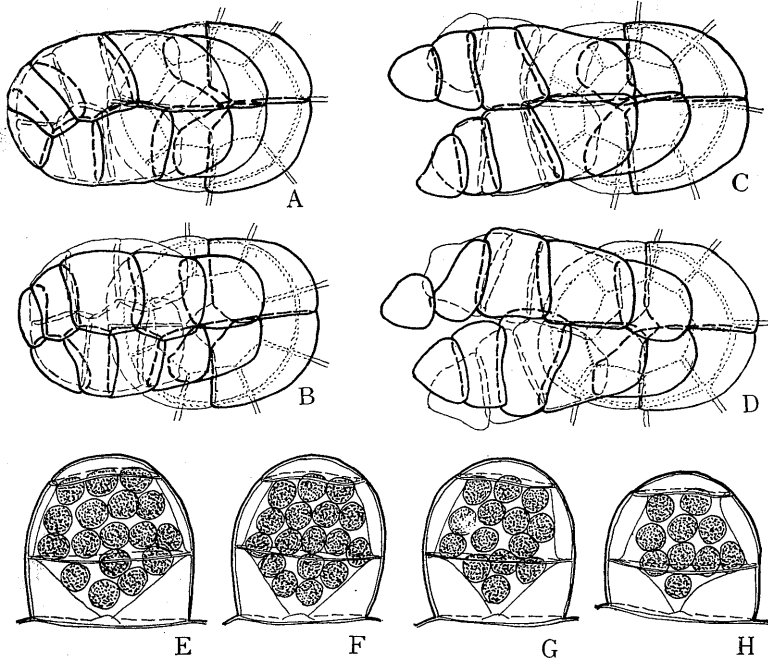


Fig. 7. *Ctenitis ampla* (Humb. et Bonpl. ex Willd.) Copeland: A-D, archegonia. $\times 200$; E-H, antheridia. $\times 200$.

free side. Midrib distinctly cushioned from the lower midway to the very bottom of sinus, obovate in shape, 5-6 cells thick in the heavier part. Margin and both surfaces of the thallus dotted with the trichome of two types. Unicellular hairs somewhat dense on the margin and sparse on both surfaces, clavate in shape, $50-70 \mu$ in length and $16-20 \mu$ in midwidth, containing minute chloroplasts and midway or terminally situated nucleus, with or without glandular secretion; secretion colourless, globular in shape, wrapping uniformly the upper half of hairs. Multicellular hairs some in number on the margin and surfaces

of near the apex mixing with unicellular hairs, 3-5 cells long, ceratoid in feature, curved toward apex, with minute chloroplasts and nucleus, not glandular, mainly with one or two branches on the lowest cell or cells; branches like unicellular hairs, often with glandular secretion. Rhizoids arise on the basal part of thallus and along the midrib to the middle of cushion, pale brown in colour, delicate. Archegonia produced on the distal part of cushion, gregarious; neck of archegonia bends toward posterior, cushioned on the quadrat of large lowest neck cells; neck cells 5-6 at the anterior and 4 at the posterior. Dioecious in appearance. Antheridia produced on the small and atheristic male thallus, globose, 70-80 μ in diameter; basal cell almost equal in height and width to the ring cell, upper wall funnel-like immersed to the base.

The prothallium of this fern is strongly characterized by ceratoid multicellular hairs which arise on the margin and surfaces of near the apex mixing with unicellular hairs.

○ベニバナクロイチゴ (伊藤浩司) Koji ITO: *Rubus mesogaeus* f. *roseus* f. nov.

クロイチゴの花色については、普通白色 (Koidzumi, Consp. Rosac. Jap., 1913; 牧野, 牧野日本植物図鑑, 1940; 大井, 日本植物誌, 1953) と記されているが, Focke (Pl. Wilson., 1911), Rehder (Man. Cul. Tree a. Shr. 2ed., 1960) や Krüssmann (Hondb. Laubgehölz. Bd. 2, 1962) によると, 花色は白以外に, バラ色又は紅色を呈することもあるようである。1960 年札幌市近郊で採集したクロイチゴの一品は, 有色花卉をもつもので, 恐らく Focke の *Rubus mesogaeus* f. *floribus rosei* と考える。このものに未だ適当な名がないようなので, ベニバナクロイチゴと新称し, 下記のように新名をあたえたい。

Rubus mesogaeus Focke in Eng. Bot. Jahrb. 29: 399 (Dec. 1900) form. **roseus** Ko. Ito, f. nov.—*R. mesogaeus* f. *floribus roseis* Focke in Sargent, Pl. Wilson, 1(1): 56 (1911).

Flores rosei.

Nom. Jap.: Benibana-no-kuroichigo (nom. nov.)

Hab.: Bankei-no-Sawa, Sapporo, Hokkaido (Ko. Ito, May 29, 1960—Typus in SAPA).
(北海道大学農学部植物学教室)